Decision making in Basketball

An empirical study on the involvement of ecological informers and associative knowledge

Silvan Steiner[1], Yannick Kunz[1]

Introduction

In interactive team sports, athletes constantly take behavioral decisions in situationally constrained contexts. Ecological perspectives assume that situational cues contribute significantly to these decisions. Social-cognitive approaches posit that athletes consider internally stored information to complement ecological information. In line with these notions, significant effects of situational information and associative knowledge on passing decisions in Soccer have been found (Steiner, 2015). The aim of this study was to test the existence of similar effects in Basketball.

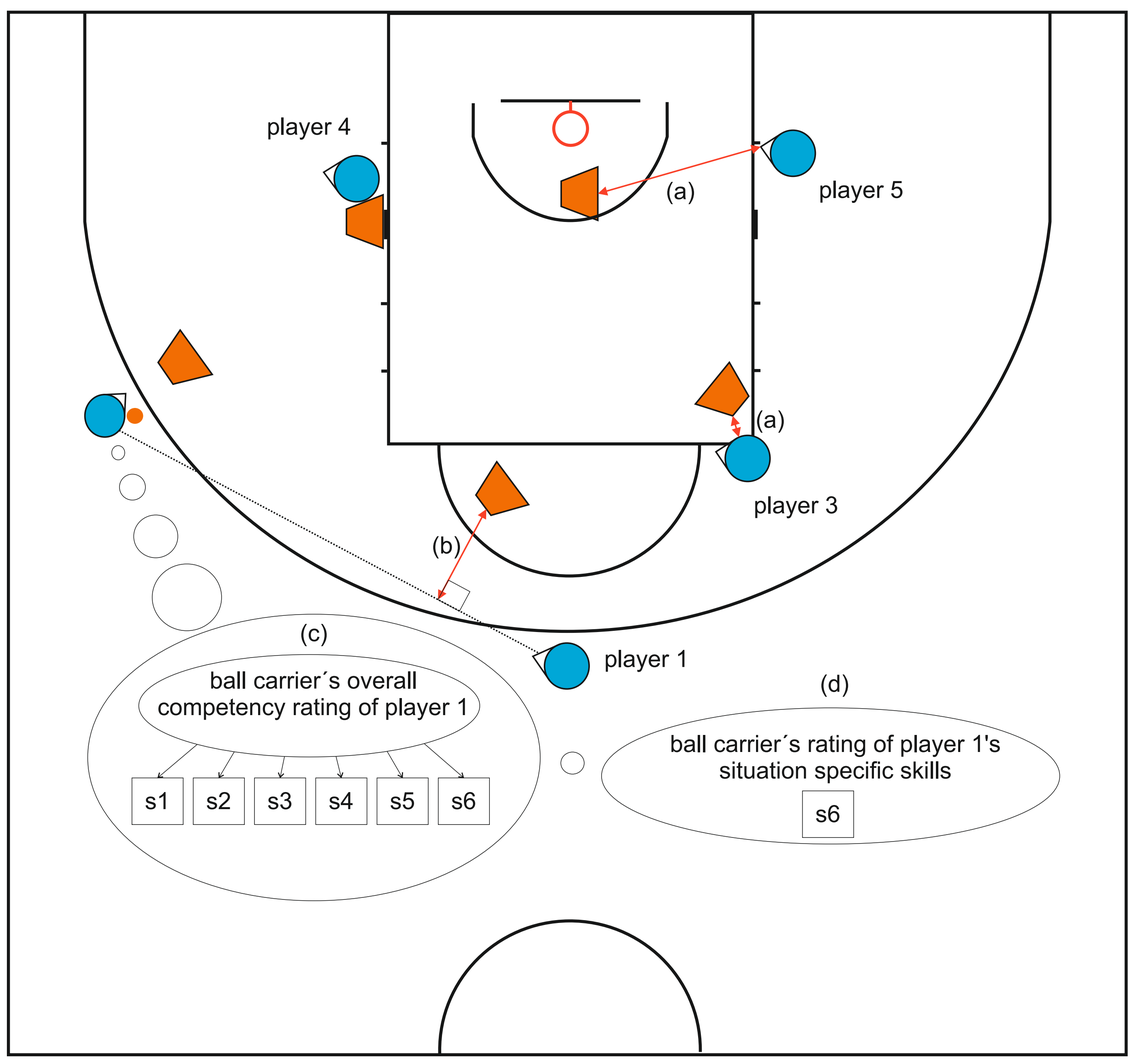

Figure 1. Illustration of a game situation used as stimulus material in the study. Examples for the computation of the variables defensive coverage (a), act-specific defence (b), overall competency (c) and situation-specific skills (d) are included.

Methods

Three Basketball teams (N = 38, M = 23.47 years, SD = 6.41) playing in the third regional league of the ProBasket Association participated in the study. For each team, graphic illustrations of ten offensive game situations taken from championship games served as stimulus material (figure 1). Participants took the perspective of the person on the ball and indicated which of six predefined acts (shooting [option A], penetration towards the basket [B], passes to each of four team members [C to F]) would be their first, second, and third choice, respectively. Two measures representing situational constraints in regard to each act were calculated: The amount of defensive coverage by opponents (figure 1, parameter a), and the openness of the area required to perform an act (figure 1, parameter b). Furthermore, participants rated all team members on six items covering Basketball-relevant skills. The ratings were used to calculate measures of associative knowledge. A latent variable representing personal (for options A and B) and team members' (options C to F) overall competency (figure 1, parameter c) and a manifest variable representing (personal and team members') situation-relevant skills (figure 1, parameter d) were computed. Finally, a variable that differentiated between options representing a direct approach to the basket (options A and B) and those representing an indirect approach via a pass to a team member (options C to F) was included. Ordinal regressions were calculated to estimate the effects of the ecological context and associative knowledge on the participants' decisions.

Table 1. *Parameter estimates of the predictor variables on action decisions*

		estimates	SE	Wald	df	Sig.	CI95%
	Defensive coverage (a)	1.086	.108	100.858	1	.000	0.874;1.298
	Act-specific defence (b)	1.084	.122	78.595	1	.000	0.844;1.323
	General competency (c)	-.496	.406	1.490	1	.222	-1.292;0.300
	Situation-relevant skills (d)	1.009	.279	13.046	1	.000	0.462;1.557
	Direct option (drive/shot)	.883	.097	82.703	1	.000	0.692;1.073
	Indirect option (pass)	0			0		
Threshhold	Choice=1	1.656	.330	25.134	1	.000	1.009;2.304
	Choice =2	2.417	.332	52.846	1	.000	1.765;3.069
	Choice =3	3.402	.337	102.185	1	.000	2.743;4.062

Results

Results showed significant effects of defensive coverage (β = 1.084, p < 0.001) and the openness of the area required to perform the act (β = 1.086, p < 0.001). The harder a specific act was defended, the lower the chances that this option would be chosen. Chances for an act increased with more space available for its performing. There was no effect of the participants' overall competency rating of the person involved in an act (self-ratings for options A, B; other-ratings for options C to F; β = -0.496, p = 0.222). A significant effect of the situation-relevant competency ratings was found (β = 1.009, p < 0.001). Finally, athletes chose significantly more often direct approaches to the basket (options A and B) than passes to their team members (β = 0.883, p < 0.001). Pseudo R^2 measures for the model were .116 (Cox & Snell) and .127 (Nagelkerke).

Discussion and conclusion

The study replicates previous findings regarding the effects of ecological informers and associative knowledge on decision making in interactive team sports. The significant effect of the situation-relevant skills supports the idea that athletes base their decisions on knowledge that associates very specifically to current game context. Implications for further research are to specify more ecological variables and clusters of associative knowledge and to test their effects on decision making in sports.

References

Steiner, S. (2015). Effects of team knowledge and ecological constraints on decisional processes in customized football game scenarios. In R. Seiler & O. Schmid (eds.), *Sport psychology. Theories and applications for performance, health and humanity. Proceedings, 14th European Congress of Sport Psychology, 14th to 19th July 2015, Bern, Switzerland* (p. 192). Bern: University of Bern, Institute of Sport Science.

[1] Universität Bern
Institut für Sportwissenschaft
Bremgartenstrasse 145
CH-3012 Bern

Kontakt:
silvan.steiner@ispw.unibe.ch